IN THE CLAIMS

1. (Original) An alloy in a metal matrix composite construct having a high burn and oxidation resistance consisting essentially of:

about 2.5 to about 6 weight percent aluminum;

about 30 to about 50 weight percent of nickel;

about 3 to 30 weight percent of zinc; and

the balance copper.

2. (Original) The alloy of claim 1, further consisting of a material selected from the group consisting of silicon, chromium, titanium, and combinations thereof.

3. (Original) The alloy of claim 2, wherein the material selected from the group consisting of silicon, chromium, titanium, and combinations thereof, is present in an amount of about 2 to about 6 weight percent.

4.-10. (Cancelled)

11. (Original) A metal matrix composite material, comprising:

an alloy consisting essentially of:

about 2 to about 4 weight percent aluminum;

about 10 to about 15 weight percent nickel;

about 1 to about 3 weight percent titanium;

about 0.25 to about 2 weight percent chromium;

the balance of the alloy copper; and

a reinforcing agent selectively positioned within said alloy.

12. (Original) The metal matrix composite material of claim 11, wherein the reinforcing agent is a particle having an average particle size of about 10 micrometers to about 100 micrometers.

13. (Original) The metal matrix composite material of claim 11, wherein said reinforcing agent is about 40 to about 90 volume percent of the material.

14. (Original) The metal matrix composite material of claim 11, wherein said reinforcing agent is about 55 to about 65 volume percent of the material.

15. (Original) The metal matrix composite material of claim 11, wherein substantially all of said reinforcing agent is added to the composite as a starting material.

16. (Original) The metal matrix composite material of claim 11, wherein the reinforcing agent is a material selected from the group consisting of alumina, silicon carbide, and combinations thereof.

17. (Original) The metal matrix composite material according to claim 11, wherein the reinforcing agent is a present in the metal matrix composite material in the range of about 15 to about 70 volume percent.

18. (Original) A metal matrix composite material comprising:

a metal alloy consisting essentially of:

about 3 to about 6 weight percent aluminum;

about 15 to about 45 weight percent of zinc;

the balance of the alloy copper; and

a reinforcing agent selectively disposed within said alloy.

19. (Original) The metal matrix composite material according to claim 18, wherein said alloy consists further of a material selected from the group consisting of silicon, chromium, titanium, and combinations thereof.

20. (Currently Amended) The metal matrix composite material according to claim 19, wherein the material selected from the group consisting of silicon, chromium, titanium, and combinations thereof, is present in an amount ~~of less than about 3 weight percent~~ up to about 7 weight percent.

21. (Original) The metal matrix composite material according to claim 18, wherein said reinforcing agent is a fiber having a first dimension greater than a second dimension.

22. (Original) The metal matrix composite material according to claim 21; wherein said first dimension is about 8 to about 20 micrometers.

23. (Original) The metal matrix composite material according to claim 21, wherein said second dimension is substantially equivalent to a dimension of a construct formed with said alloy.

24. (Original) The metal matrix composite material according to claim 18, wherein the reinforcing agent is a material selected from the group consisting of alumina, silicon carbide, carbon, and combinations thereof.

25. (Original) The metal matrix composite material according to claim 18, wherein the reinforcing agent is a present in the metal matrix composite material in the range of about 15 to about 70 volume percent.

26. (Original) The metal matrix composite material according to claim 18, wherein the reinforcing agent is a present in the metal matrix composite material in the range of about 55 to about 85 volume percent.

27. (Original) An oxygen-rich environment rocket engine component including a metal matrix composite, the metal matrix composite comprising:

a metal alloy having a threshold burn resistant pressure greater than about 5,000 pounds per square inch;

a reinforcement agent; and

a bonding promoter adapted to promote an adhesion between said metal alloy and said reinforcement agent.

28. (Original) The oxygen-rich environment rocket engine component of claim 27, wherein said metal alloy comprises:

about 2.5 to about 6 weight percent aluminum;

about 3 to about 30 weight percent nickel;

about 3 to about 30 weight percent zinc; and

copper.

29. (Original) The oxygen-rich environment rocket engine component of claim 27, wherein said bonding promoter comprises a material selected from the groups consisting of silicon, chromium, titanium, and combinations thereof.

30. (Original) The oxygen-rich environment rocket engine component of claim 29, wherein said bonding promoter is about 2 to about 7 weight percent of said metal alloy.

31. (Original) The oxygen-rich environment rocket engine component of claim 27, wherein said reinforcing agent is the material selected from a group consisting of ceramic particles, ceramic whiskers, ceramic fibers, or combinations thereof.

32. (Original) The oxygen-rich environment rocket engine component of claim 27, wherein said reinforcing agent is a material selected from the group consisting of alumina, silicon, carbide, and combinations thereof.

33. (Original) The oxygen-rich environment rocket engine component of claim 27, wherein said reinforcing agent is about 15 to about 70 percent of the volume of the metal matrix composite.

34. (Original) The oxygen-rich environment rocket engine component of claim 27, wherein said metal alloy and said bonding promoter are pressure injected into said reinforcement agent.

35. (Original) A method of forming a metal matrix composite, comprising:
producing a copper based metal alloy in a reducing environment;
making flowable the copper based metal alloy;
infiltrating a reinforcing structure with the flowable copper based metal alloy;
heat treating the alloy.

36. (Original) The method of Claim 35, wherein producing a copper based alloy includes raising the temperature of copper particles and selected alloying particles to a melting temperature and mixing the melted particles together.

37. (Original) The method of Claim 36, wherein producing a copper based metal alloy includes selecting about 2.5 to about 6 weight percent aluminum;
about 30 to about 50 weight percent nickel particles;
about 3 to about 30 weight percent zinc particles; and
the balance copper particles.

38. (Original) The method of Claim 36, wherein producing a copper based metal alloy includes selecting about 3 to about 5 weight percent aluminum, about 25 to 35 weight percent zinc, about 0.5 to 1.5 weight percent titanium and the balance copper.

39. (Original) The method of Claim 36, wherein producing a copper based metal alloy includes selecting about 2 to about 4 weight percent aluminum, about 10 to 15 weight percent nickel, about 1 to about 3 weight percent titanium, about 0.25 to about 2 weight percent chromium and the balance copper.

40. (Original) The method of Claim 36, wherein producing a copper based metal alloy includes selecting about 3 to about 6 weight percent aluminum, about 15 to 45 weight percent zinc, and the balance copper.

41. (Original) The method of Claim 35, wherein producing a copper based metal alloy in a reducing environment substantially eliminates the production of oxide particles or materials in the copper based metal alloy.

42. (Original) The method of Claim 35, wherein said reinforcing structure forms approximately 55 to about 65 volume percent of the metal matrix composite;

wherein said reinforcing structure includes substantially all non-alloy based portions of the metal matrix composite.

43. (Previously Presented) An alloy in a metal matrix composite construct having a high burn and oxidation resistance consisting essentially of:

about 2.5 to about 6 weight percent aluminum;

about 30 to about 50 weight percent of nickel;

about 3 to 30 weight percent of zinc; and

the balance copper;

wherein the metal matrix includes a reinforcement agent.

44. (Previously Presented) The alloy of claim 43, further consisting of a material selected from the group consisting of silicon, chromium, titanium, and combinations thereof.

45. (Previously Presented) The alloy of claim 43, wherein the material selected from the group consisting of silicon, chromium, titanium, and combinations thereof, is present in an amount of about 2 to about 6 weight percent.

46. (Previously Presented) The alloy of claim 43, wherein said reinforcing agent is a material selected from the group consisting of alumina, silicon, carbide, and combinations thereof.

47. (New) A metal matrix composite having a high burn and oxidation resistance, consisting of:

a metal matrix having about 2.5 to about 6 weight percent aluminum, about 30 to about 50 weight percent nickel, about 3 to 30 weight percent zinc, up to about 7 weight percent of at least one element selected from a group consisting of silicon, chromium, titanium, and combinations thereof, and a balance of copper, and

reinforcing fibers within the metal matrix, the reinforcing fibers consisting of at least one material selected from metal oxide, carbide, or combinations thereof.